

Preview Material for Exam 2 ~ Summer 2010

Use a #2 pencil to fill in the following information on your NCS answer sheet:

- Put your **OKEY ID** in the boxes indicated for LAST NAME and darken within the corresponding circles.
- Write your **name** (Last, First) in the space above the boxes containing your OKEY ID.
- Enter the number **1022** and darken within the corresponding circles in the first 3 columns of the "Student ID".

Read all questions and answers *carefully* before choosing the single BEST response for each question. Please feel free to raise your hand to ask me questions during the exam!

Organophosphates are a group of insecticides which are commonly used in the US, especially to increase crop production. They interfere with the normal action of the nervous system by stopping acetylcholinesterase from working properly. Relatively low concentrations are effective in killing pests without harming other animals but high concentrations can be dangerous to people.

In May of 2010, a study out of Harvard showed that there may be a link between pesticide exposure and ADHD (attention deficit hyperactivity disorder). Scientists collected urine samples from 1,139 children (whose parents volunteered them to participate) and found that those who had the highest levels of organophosphate pesticides in their urine were 2X more likely to be diagnosed with ADHD.

At a local park there is a garden area which includes a variety of green, red, and purple leafed plants. An event planner has several tarps set up around the park, some of which extend from the pavement over the garden area. Each tarp appears green in color but allows all other wavelengths of light through them, providing visual appeal but not much shade.

The toucan is an interesting bird which attracts a lot of attention with its oversized beak. Often, the beak accounts for more than 40% of the surface area of the body of the bird! A group of researchers predicted the purpose of the beak dealt with temperature regulation and studied this idea in the lab. They housed a group of toucans in temperature-controlled chambers and imaged their bodies with heat-sensing cameras while changing the room temperature. They found that blood vessels in the toucan's bill will constrict or dilate in response to the environmental temperature. Their results were published in *Science* magazine in 2009.

Based on genetic analyses, toucans are close relatives to woodpeckers, which do not share the same trait for the oversized beak.

The flowers of the Royal Catchfly have a design which favors butterflies as pollinating agents. The butterflies' proboscis (mouthpart) is long enough to reach the nectar and to the bottom of the long, narrow tube that is formed by the calyx (green plant part which protects the flower bud) while the flared petals provide a landing platform for the butterfly. The red flowers bloom in mid-summer but there is no floral scent, which is fitting considering that butterflies do not have a sense of smell but can see a wide range of color.

Anoles are small, green or brown lizards which primarily live in tropical regions. On the Caribbean islands, each island includes several unique species which likely have a common ancestor and evolved over a relatively short period of time. Species are often described by their use of habitat, including twig, grass-bush, and tree trunk.

A plant is exposed to a drug which disrupts it from conducting photosynthesis. In the laboratory, the plant is studied to learn more about the exact nature of the drug.

A friend of yours was bitten by an Australian tick while on vacation and had to be rushed to a hospital. The poison, called holocyclotoxin, inhibits the release of acetylcholine.
